AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A magnetic recording medium comprising, in sequence, on a nonmagnetic substrate;~~,~~

at least one soft magnetic underlayer;~~,~~

an orientation control layer to control the orientation of the layer immediately ~~above~~ thereabove;~~,~~ and

a perpendicular magnetic layer having an axis of easy magnetization which is oriented mainly perpendicularly to the nonmagnetic substrate,

wherein ~~and~~ said soft magnetic underlayer has a multilayer structure having a plurality of soft magnetic layers comprising a soft magnetic material, and one or more separation layers interposed between said soft magnetic layers, ~~and~~

at least one of said soft magnetic layers comprises a material with a structure having no magnetic domain walls,

a direction of magnetization of an upper soft magnetic layer is different from a direction of magnetization of a lower soft magnetic layer, and

the direction of the magnetization of said soft magnetic layer is along the radius of said nonmagnetic substrate and is oriented towards the periphery of the substrate or towards the center of said nonmagnetic substrate.

2. (currently amended): A magnetic recording medium according to claim 1, wherein the material with a structure having no magnetic domain walls ~~is~~ comprises one selected from FeAlSi, FeTaN, FeTaC, FeC, FeAlSi ~~type~~ alloys, FeTaN ~~type~~ alloys, and FeTaC ~~type~~ alloys.

3. (currently amended): A magnetic recording medium according to claim 1, wherein the separation layer comprises 50 at. % or more of one ~~of, or two~~ or more of the elements Ru, Rh, Re, Ir, and Cu.

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4. (currently amended): A magnetic recording medium according to claim 1, wherein the separation layer is constituted of a soft magnetic material that is different from the material ~~constitutions~~ constituting the soft magnetic layers between which the separation layer is interposed.

5. (currently amended): A magnetic recording medium according to ~~claims 2~~ claim 1, wherein the product Bs · t (T · nm) of the saturation magnetic flux density per layer Bs (T) of the soft magnetic layer and the thickness of the soft magnetic layer t (nm), is 3 T · nm or more for each of the soft magnetic layers.

6. (currently amended): A magnetic recording medium according to ~~claims 2~~ claim 1, wherein the magnetic flux density of the soft magnetic layer is 0.4 T or more.

7. (currently amended): A magnetic recording medium according to ~~claims 2~~ claim 1, wherein the thickness of the soft magnetic underlayer is 40 nm or more.

8. A magnetic recording medium according to ~~claims 3~~ claim 1, wherein the thickness of the separation layer is in the range from 0.1 nm to 5 nm.

9. (canceled).

10. (currently amended): A magnetic recording medium according to ~~claims~~ claim 1, wherein among sets of an upper and a lower soft magnetic layers between which a separation layer is interposed, at least one set has directions of magnetization which are antiparallel.

11. (canceled).

12. (currently amended): A magnetic recording medium according to ~~claims~~ claim 1, wherein a hard magnetic layer is formed between the nonmagnetic substrate and the soft magnetic underlayer, and the magnetization of said hard magnetic layer is directed along the radius of the substrate and towards the periphery or the center of the substrate, and bonded with the magnetization of the soft magnetic layer which is the lowest layer of the soft magnetic underlayer.

13. (currently amended): A magnetic recording medium according to ~~claims~~ claim 1, wherein the lowest layer of the soft magnetic underlayer comprises a material of one selected from the group consisting of FeAlSi, FeTaN, FeTaC, FeAlSi ~~type~~ alloys, FeTaN ~~type~~ alloys, and FeTaC ~~type~~ alloys.

14. (currently amended): A magnetic recording medium according to ~~claims~~ claim 1, wherein the top layer of the soft magnetic underlayer is a soft magnetic layer.

15. (currently amended): A magnetic recording medium according to ~~claims~~ claim 1, wherein a part of the surface or all of the surface of the soft magnetic underlayer nearest the perpendicular magnetic layer is oxidized.

16. (currently amended): A method for producing a magnetic recording medium ~~by forming,~~ on a nonmagnetic substrate, comprising the steps of:

forming at least one soft magnetic underlayer,

forming an orientation control layer for controlling the orientation of the layer immediately above, and

forming a perpendicular magnetic layer having an axis of easy magnetization which is oriented mainly perpendicularly to the substrate,

~~with~~ wherein the soft magnetic underlayer having a multilayer structure ~~having~~ has a plurality of soft magnetic layers comprising a soft magnetic material, and one or more separation layers interposed between said soft magnetic layers, ~~and~~

one or more of the soft magnetic layers comprises a material with a structure having no magnetic domain walls, and

a magnetization of said soft magnetic layer is directed along the radius of said nonmagnetic substrate towards the periphery or the center of said nonmagnetic substrate.

17. (currently amended): A method for producing a magnetic recording medium according to claim 16, wherein the material with a structure having no magnetic domain walls comprises one selected from the group ~~constituting~~ consisting of FeAlSi, FeTaN, FeTaC, FeC, FeAlSi alloys, FeTaN alloys, and FeTaC alloys.

18. (canceled).

19. (currently amended): A method for producing a magnetic recording medium according to ~~claims 17~~, claim 16 wherein a treatment for oxidizing the surface of the soft magnetic underlayer is included.

20. (currently amended): A magnetic recording and reproducing device comprising:

a magnetic recording medium having at least nonmagnetic substrate, a soft magnetic underlayer, an orientation control layer to control the orientation of the layer immediately above it, and a perpendicular magnetic layer having an axis of easy magnetization which is oriented mainly perpendicularly to the nonmagnetic substrate,

and a magnetic head for carrying out recording and reproducing of the information to and from the magnetic recording medium,

wherein the soft magnetic underlayer of the magnetic recording medium ~~being formed with~~ has a multilayer ~~constitution~~ structure having a plurality of soft magnetic layers comprising a soft magnetic material, and one or more separation layers interposed between the soft magnetic layers,

one or more of the soft magnetic layers comprises a material with a structure having no magnetic domain walls, and

a magnetization of said soft magnetic layer is directed along the radius of said nonmagnetic substrate towards the periphery or the center of said nonmagnetic structure.

21. (original): A magnetic recording and reproducing device according to claim 20, wherein the material with a structure having no magnetic domain walls comprises one selected from the group consisting of FeAlSi, FeTaN, FeTaC, FeC, FeAlSi type alloys, FeTaN type alloys, and FeTaC type alloys.